Trail Challenges

CASE STUDY: AIRPORT PARKWAY UNDER-CROSSING

Each trail is different. This fact sheet offers a brief overview of the opportunities and challenges faced along the Guadalupe River Trail. This document was prepared to help the reader gain a better understanding of the costs and time required to build a trail.

Background

San José is the nation's 10th largest city in the U.S., and largest in northern California. It is known as the Capitol of Silicon Valley. The city is committed to remaining a top-ranked place to work, live, learn and play among its nearly 1,000,000 residents. Trails are an important component of both the city's park system and transportation network.

The City's on-street bikeways (150 miles) and trails (50 miles) serve 38,000 bike commuters annually. This impressive network is nationally

The project significantly improves access along one of the city's most popular trail systems. It eliminates a barrier that once interrupted a 9 mile trail system. The built project provides passage beneath a busy non signalized intersection and a river crossing. Both components also provide access to the airport and nearby Light Rail system.

recognized, and recently secured the National Bicycle Friendly Community Award from the League of American Bicyclists.

The City has an ambitious plan to add an additional 50 miles of trails by 2022 as part of its Green Vision; an effort to reduce energy consumption and broaden the city's economic base with clean-tech industries.

Primary Challenges

- Funding from five sources
- Multi-agency coordination (6 agencies)
- Constrained development site (along a 20' wide maintenance road)
- Concurrent construction projects (built alongside San Jose's largest public works project, $1B expansion of airport)
- Integration within existing trail system (linked to 9 miles of active trails)

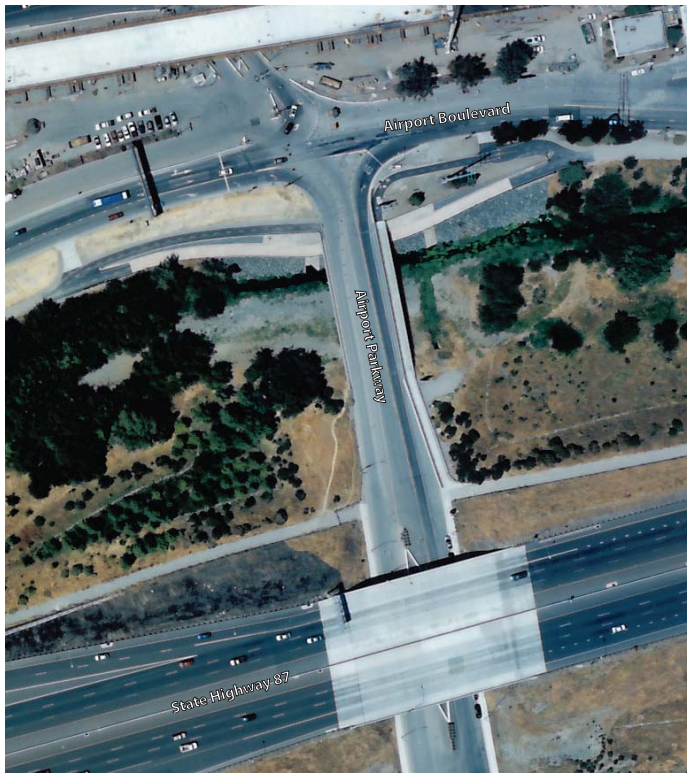
Project Description

The Airport Parkway Project is a Class I trail facility along the Guadalupe River that has two primary components serving recreational users and commuters:

- Under-crossing beneath the intersection of Airport Parkway and Airport Boulevard, and
- Surface trail on the Airport Parkway bridge spanning the river.

Prior to construction of the project, gravel trails on the east and west bank were not linked, and Airport Parkway presented an impassable barrier to through travel. Although relatively small in scope, the project has made a significant contribution to trail continuity and functionality.

The under-crossing provides a 4 m (13.12 ft) wide by 137 m (450 ft) long concrete-paved trail under-crossing



North

Under-crossing passes beneath Airport Parkway, immediately east of Airport Boulevard

of the Airport Parkway Bridge, along the west bank of the river. Asphalt concrete-paved trail approaches and connections to a new surface trail on the existing bridge are also included. The trail under-crossing ramps are ADA-compliant. The trail beneath the existing bridge has 2.44 m (8 ft) minimum of vertical clearance. Special textured surfaces were used to reduce the likelihood of graffiti. The under-crossing provides trail access just steps away from the airport.

The surface trail built upon the existing Airport Parkway roadway bridge accommodates trail users as they cross the Guadalupe River from its west bank to the east bank. This feature occurred by widening an existing 1.8 m (6 ft) sidewalk to a 3.0 m (10 ft) wide two-way trail with safety

Usage of the trail jumped 86% in 2008 largely due to completion of the Airport Parkway project - *Trail Count 2008*


Aesthetically integrated seismic blocks to enhance bridge structure

railings. The project team determined that the bridge had more than sufficient capacity, so a travel lane was removed and divided trail was added.

In conjunction with the Airport Parkway Project, the Santa Clara Valley Water District constructed an under-crossing nearby beneath Highway 101 as part of the same construction contract. The Water District administered both projects as one construction $3,000,000 contract for the following reasons:

- Prevent conflicts and delays that could have resulted from multiple contractors in a highly constrained site.
- Leverage resources and share staff resources to deliver projects of joint interest.
- Obtain "economy of scale" through a large, single award of contract.

Innovative Factors

PARTNERSHIP

The project was planned, designed and constructed through a collaborative partnership between the City and Water District. The partnership engaged numerous City departments (Airport, Transportation, Planning) and other agencies (Caltrans, Water District) to complete the project.

PERMITTING

Permits from multiple agencies were secured by the Water District for their flood protection project. As a result, the City had to design its project to meet all the conditions and criteria previously set forth by:

- Caltrans
- US Army Corps of Engineers (USACE)
- US Fish & Wildlife Service
- National Marine Fisheries Service

Project Objectives

- Provide safe passage beneath the city's busiest non-signalized intersection.
- Provide on-street trail linking airport to Light Rail.
- Provide east/west bank continuity without a new bridge structure.
- Prevent traffic delays and access limitations to the airport.
- Construct concurrently with $1B airport construction project located 500' away.
- Eliminate a physical barrier preventing access to 9-mile trail.
- Include structural enhancements to a 50-year old bridge that serves the airport's 10,000,000 arrivals and departures annually.
- Navigate multi-agency bureaucracy and numerous permits.

- California Department of Fish and Game
- Bay Area Regional Water Quality Control Board

Enhancement & Preservation

- Riparian mitigation for the environmental impacts of the project included new plantings in the river corridor and removal of invasive, non-native vegetation. Mitigation was completed by the Water District in advance of construction.
- Project design acknowledged and protected existing mitigation plantings completed by the USACE for an earlier project.
- The Water District maintained biological monitoring during the entire construction process on behalf of the City.

With all the project's complexities, it proceeded in adherence with all common environmental conditions:

- Limited construction window for work within

the river channel from June to October to avoid the salmon spawning season
- Bird nesting exclusion measures, such as bridge soffit netting and tree/vegetation trimming to minimize impacts to nesting birds within the densely vegetated river corridor.

Innovative Design Solutions

The project presented some technical design challenges that required innovative solutions.

- **Soil anchors**, drilled and installed incrementally through the existing bridge abutment wall to strengthen it so that the existing riverbank in front of the abutment wall could be safely excavated for trail under-crossing construction.
- Seismic retrofit of the existing 50-year old bridge included "**catcher blocks**" aligned with existing bridge beams incorporated into a new aesthetically treated abutment wall within the under-crossing.
- **Aesthetic integration** of the seismic retrofit elements visually enhanced the trail under-crossing structure.
- **Light-weight construction materials** made it possible to replace a travel lane on the bridge with a Class I divided trail.
- **Rock slope protection** accommodates existing utilities, steep slope conditions and unstable native soils while meeting requirements for hydraulic capacity and erosion protection.

- **Active coordination** ensured that the project could be constructed within a highly constrained site with a $1B airport expansion

occurring simultaneously, high volumes of airport traffic accommodated, airport-serving utilities preserved, and the river detoured.

- **Design continuity** of airport facilities was preserved when elevating existing bridge railings to meet Class 1 trail guidelines. the retrofit occurred in place, with aesthetic design features added to match design elements found elsewhere at the airport.

Project Outcomes

Bicycle commuters and recreational users can now travel along the Guadalupe River Trail, from Downtown San Jose to the edge of south San Francisco Bay without having to cross any surface streets or interact with vehicle traffic. Over 9 miles of continuous Class 1 trail are open to public because the under-crossing permits passage beneath the City's busiest non-signalized intersection and the surface trail on the bridge structure permits passage across the river.

A secondary outcome is that bicycle and pedestrian access to the Airport, via the surface trail along Airport Parkway, has been greatly improved. Trail users are now just a few steps away from a flight or employment at the airport.

Development of projects like Airport Parkway Under-Crossing permit more and more people to enjoy San Jose's trails and build community support for one of City's Green Vision goals to create 100 miles of inter-connected trails.